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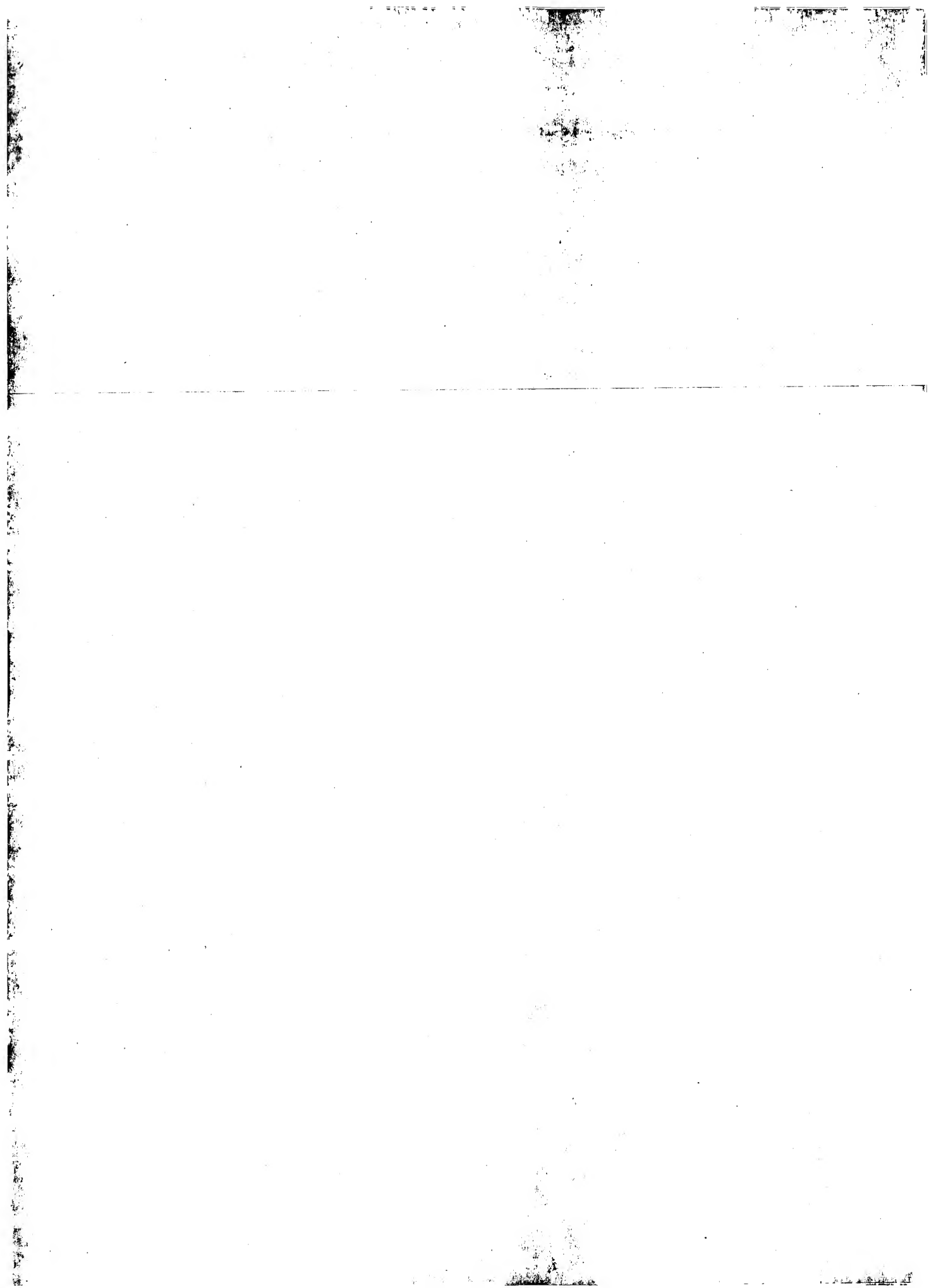
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(51) INT CL<sup>4</sup>  
**A61F 13/16**

(52) UK CL (Edition J)  
**A5R RPC**

(56) Documents cited  
**GB 2180456 A GB 2114895 A GB 1398011 A**  
**EP 0215408 A2 EP 0213642 A2 EP 0194150 A**  
**US 4655760 A**

(58) Field of search  
**UK CL (Edition J) A5R RPC RPG**  
**INT CL<sup>4</sup> A61F**

(54) Absorbent pads.

(57) A pad for absorbing human exudate is provided with a nonwoven elastomeric material (16) that has a high coefficient of friction to help hold the pad in place. Among the preferred nonwoven elastomeric materials are the materials formed from block copolymers having elastomeric and styrenic components. The materials preferably have a coefficient of friction of greater than 1 and a Sheffield smoothness rating of greater than 200 when utilizing a modified ASTM test. Fig 16 shows a pad having wings 82, 84, which are provided with a bodyside layer of nonwoven elastomeric material.

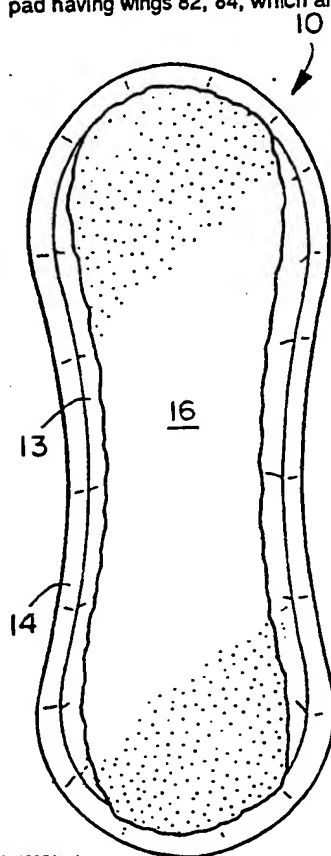


FIG. 3

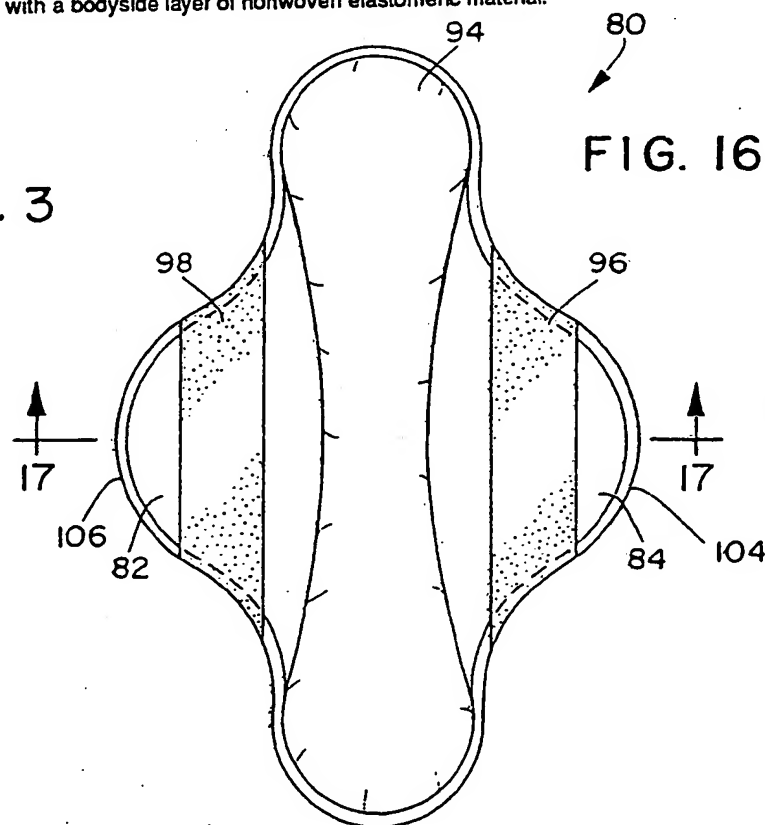


FIG. 16

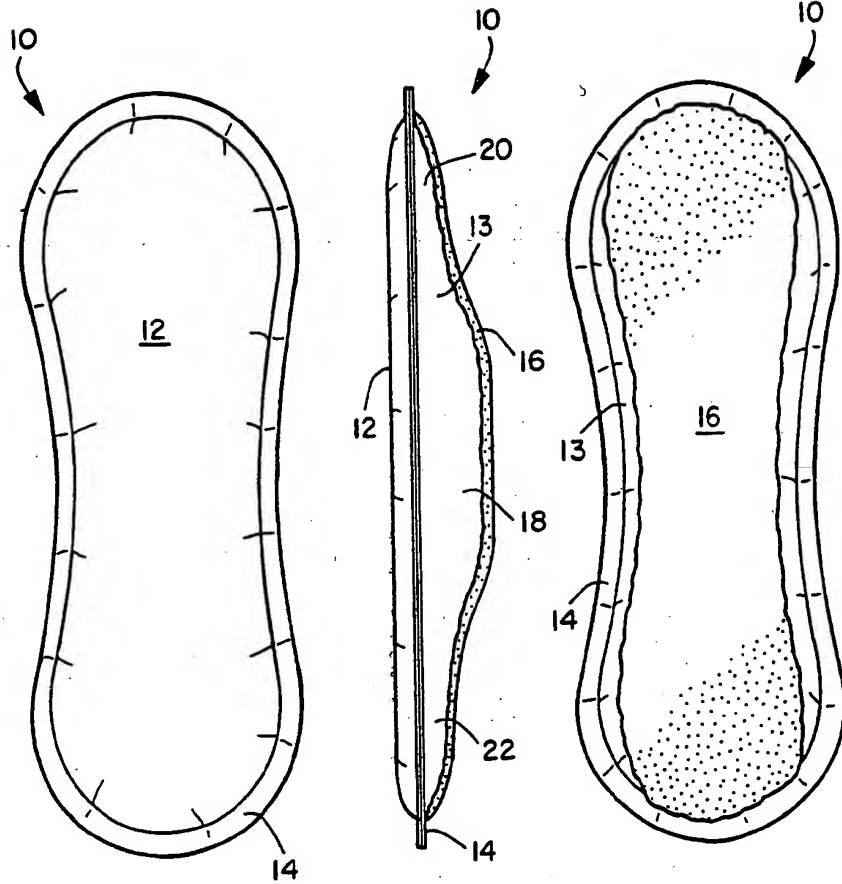


FIG. 1

FIG. 2

FIG. 3

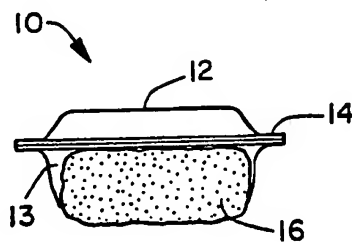


FIG. 4

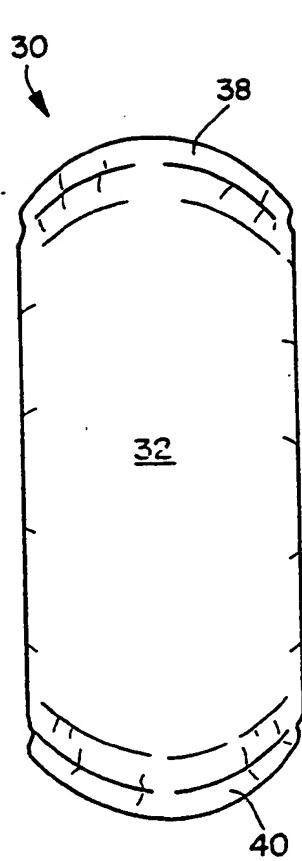


FIG. 5

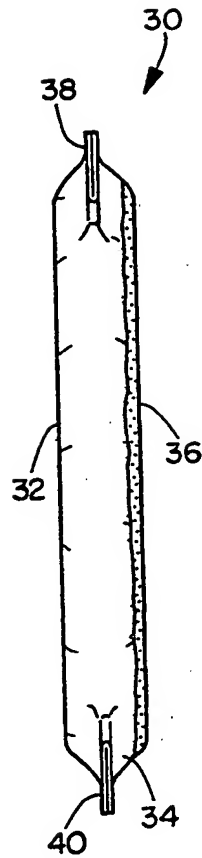


FIG. 6

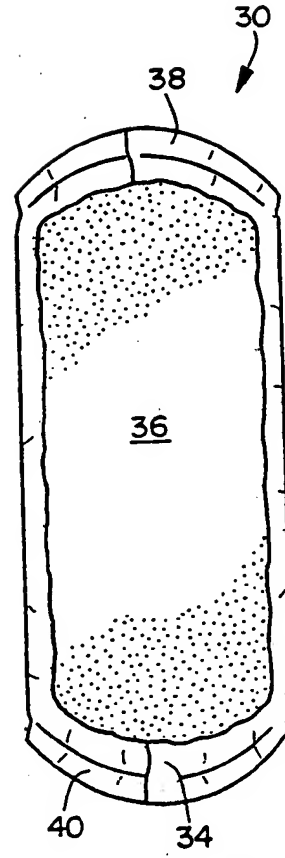


FIG. 7

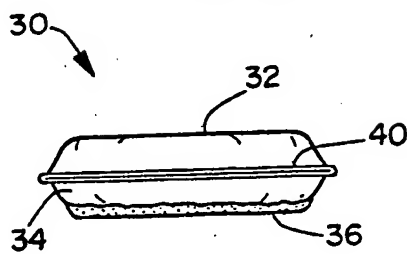


FIG. 8

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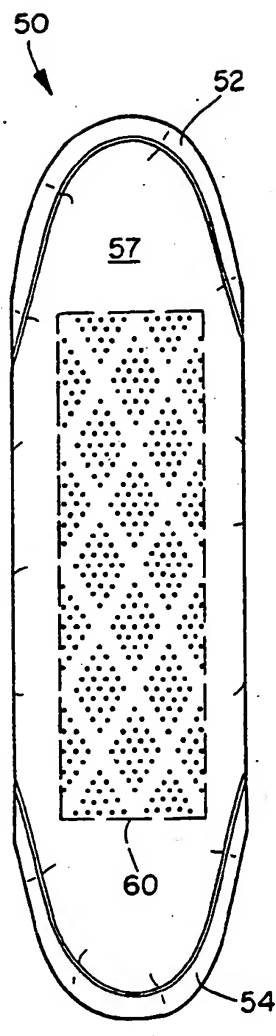


FIG. 9

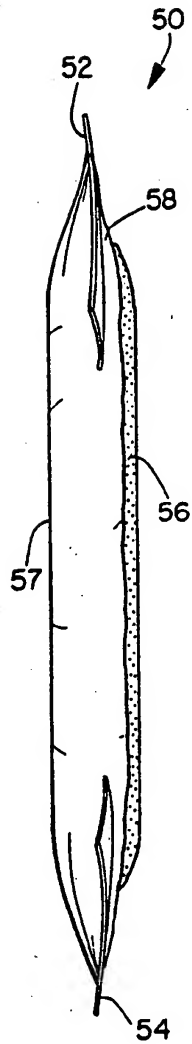


FIG. 10

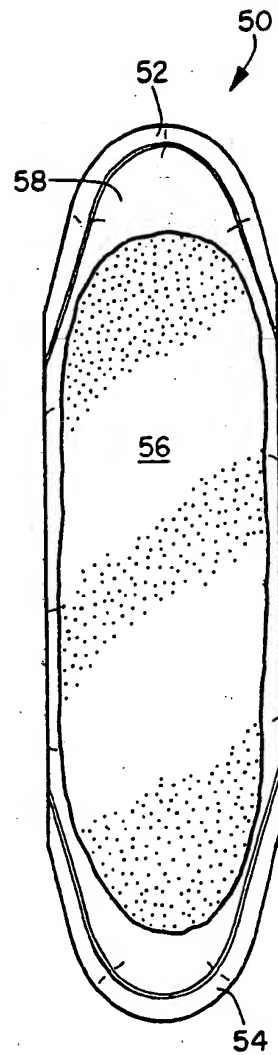


FIG. 11

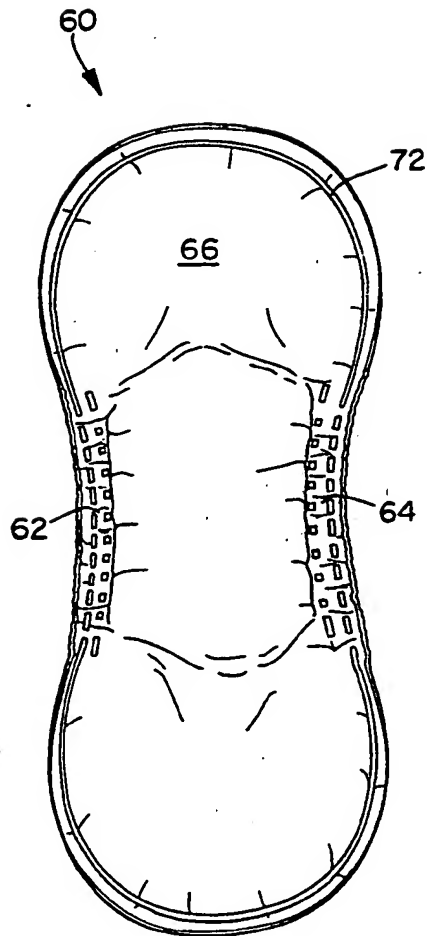


FIG. 12

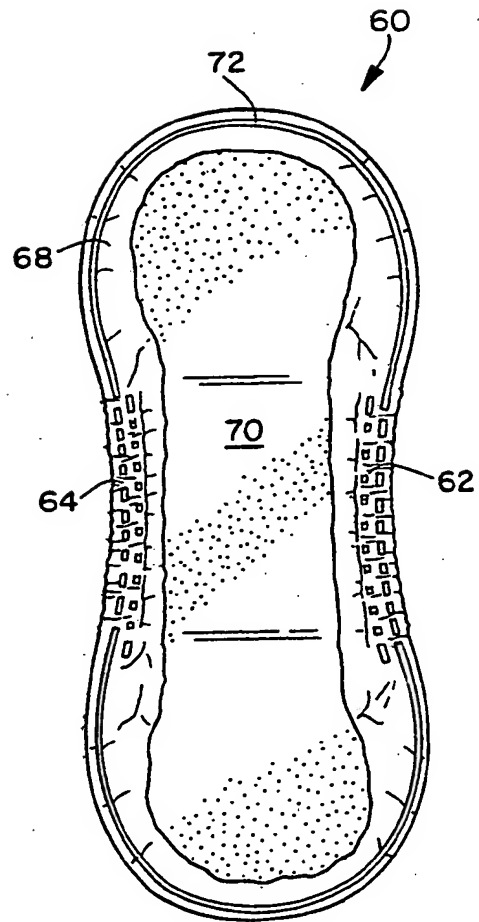


FIG. 13

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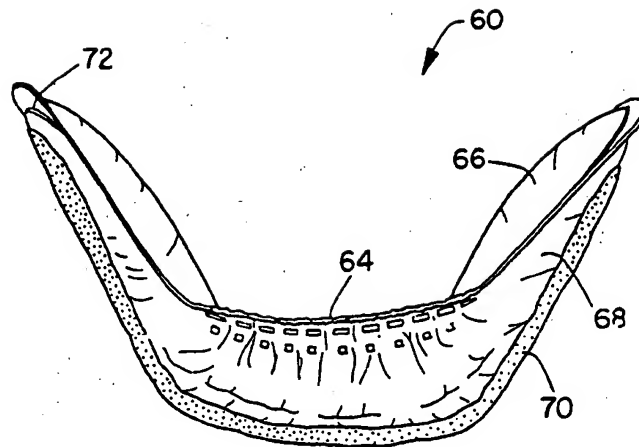


FIG. 14

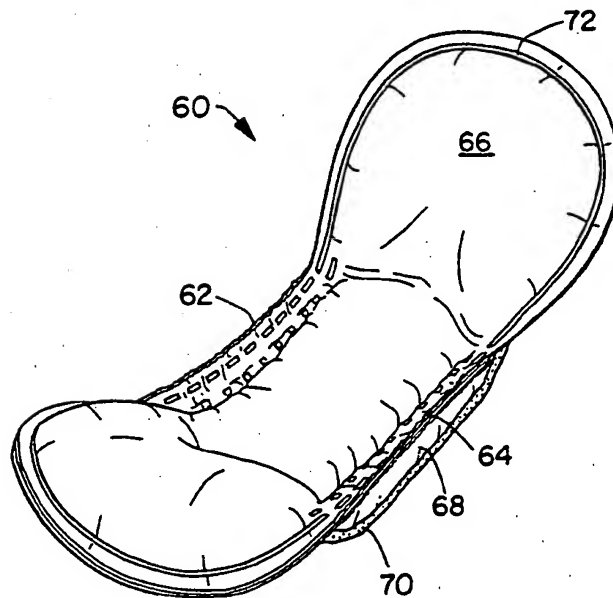


FIG. 15



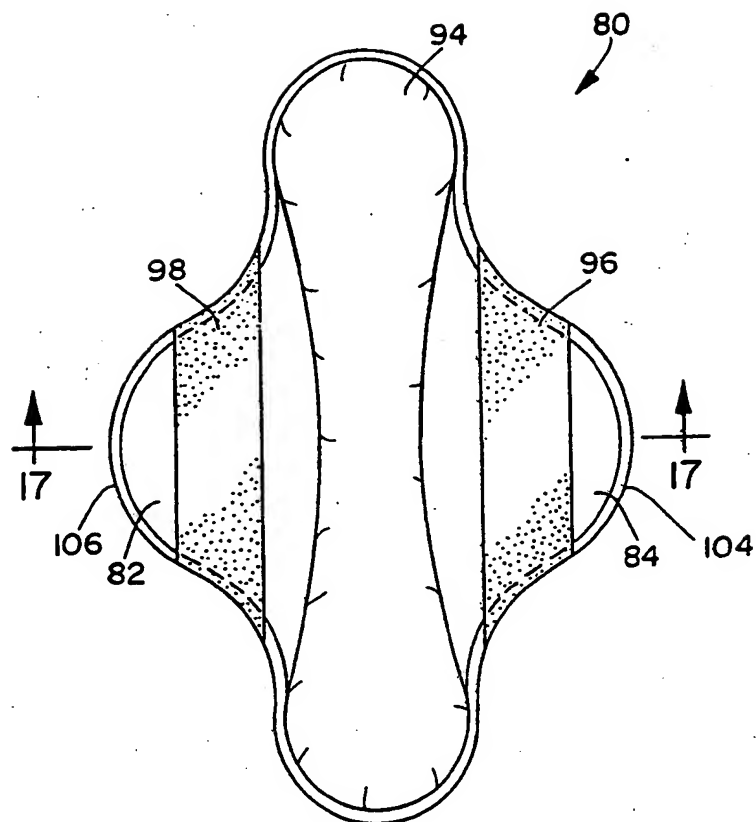


FIG. 16

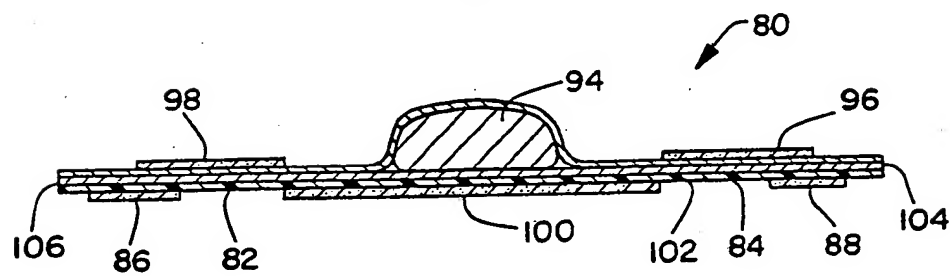


FIG. 17

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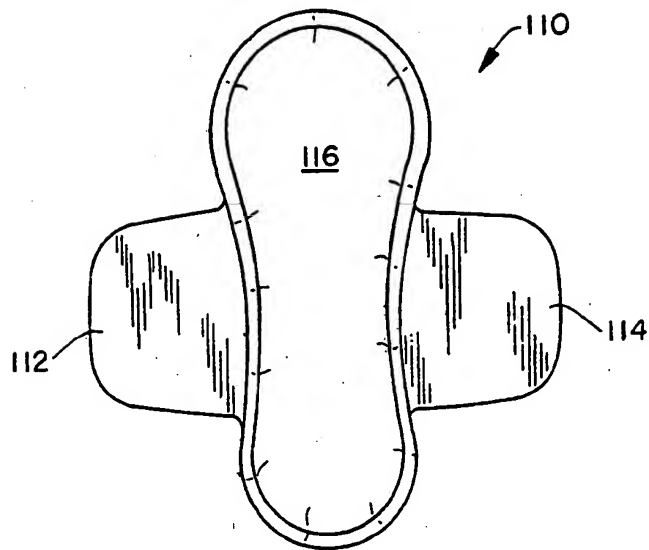


FIG. 18

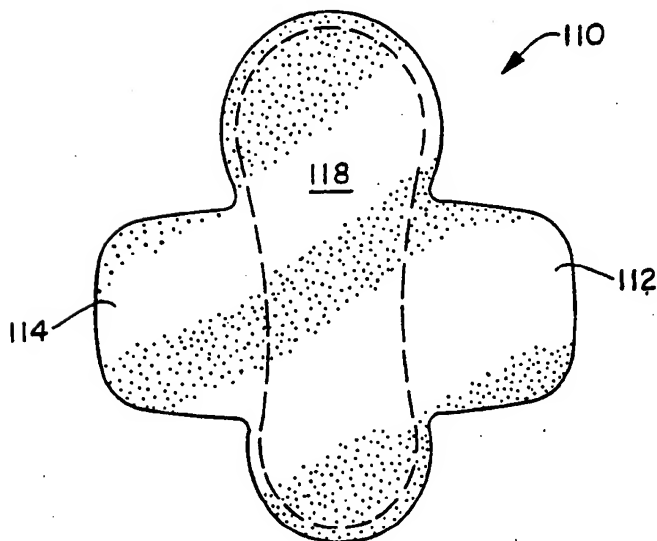


FIG. 19

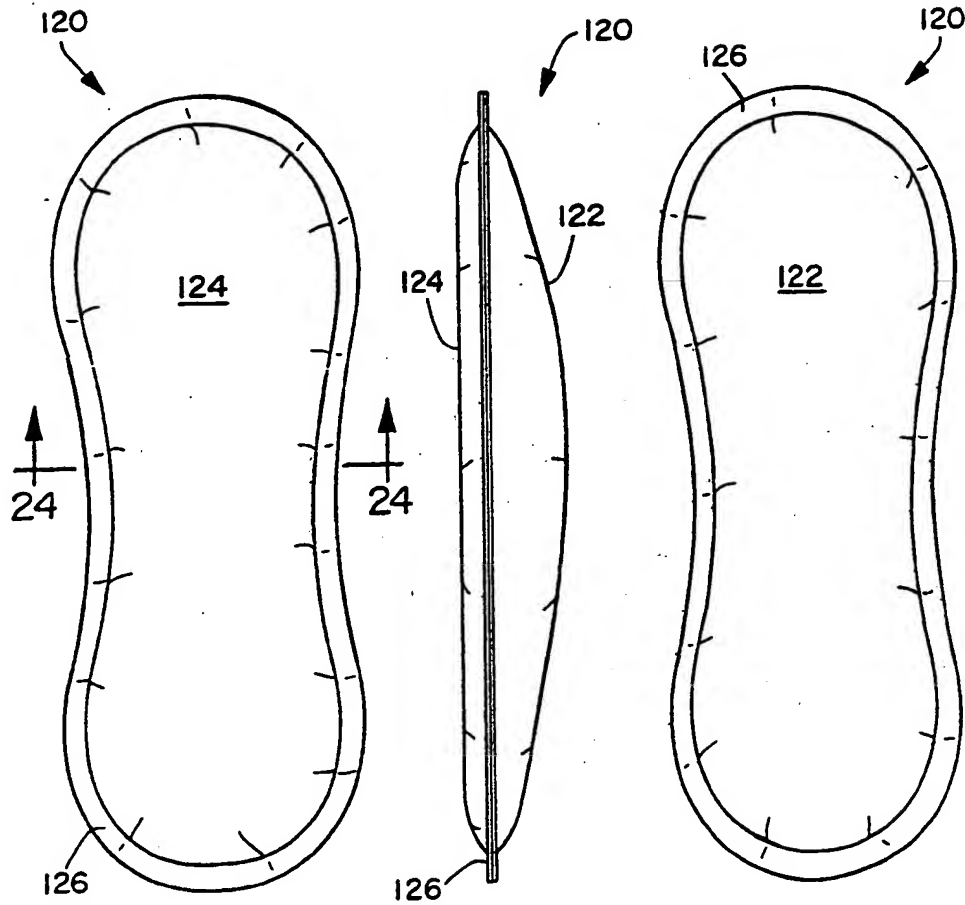


FIG. 20

FIG. 21

FIG. 22

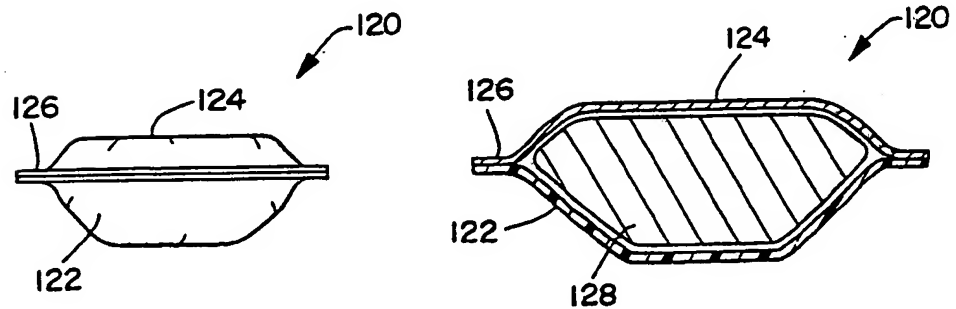


FIG. 23

FIG. 24

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"Absorbent Pad"

This invention relates to improvements in the structure of absorbent pads for absorption of human exudate. It particularly relates to pads for feminine hygiene or incontinence.

5 There has been a variety of devices or appliances configured for catamenial devices. Generally there have been offered two basic kinds of feminine protection device. These are sanitary napkins or pads that have been developed for external use, and tampons that have been developed for residence within the vaginal cavity and interruption of menstrual flow therefrom.

10 The positioning of feminine hygiene devices so as to stay in the proper location and be comfortable and unobtrusive has been of continuing interest in feminine hygiene. The use of pads or feminine napkins held in place by a belt attached to tabs on the  
15 feminine napkins was the traditional method of holding pads in place for many years. Now, the majority of external feminine products are held in place by utilization of a garment attachment adhesive. Such pressure-sensitive adhesives are placed on the back of the feminine pad and covered by a peel strip that is  
20 removed prior to attachment of the pad onto the undergarment of the wearer. The use of such adhesives presents several

disadvantages. Among these disadvantages are that the adhesive may stick too firmly to the undergarment and make removal difficult. Another disadvantage is that the adhesive may discolor the undergarment or the pad may tear apart at the time of removal. Further, the cost of adhesives and the peel strips necessary to cover them is a significant portion of the cost of the feminine pad. Adhesives also can cause discomfort if the pad is inadvertently placed upside down in the garment such that the adhesive contacts the body.

Therefore, it would be desirable if a product could be formed that would not require an adhesive, but nevertheless adequately maintain its position within the undergarment of the wearer and in correct placement on the body.

Other methods of maintaining pads for absorption of human exudate have been proposed. It has been proposed in U.S. 3,881,490 - Whitehead et al. that a pad be provided with a polyurethane foam laminated to the backing element of the pad. An incontinence device is proposed in U.S. 4,490,148 - Beckstrom that has a friction-increasing strip fixed to the underside of the garment. In U.S. 4,389,211 - Lenaghan the use of a velcro material in contact with the foam outer surface of a feminine pad is utilized as a placement mechanism. However, the above materials suffer from the disadvantage that the foam materials are relatively high in cost and require adhesive connection to the undergarments. Further, such materials have not been shown to be particularly preferred by the users of the garments to which they are attached. Therefore, there is a continuing need for an

improved non-adhesive system for holding catamenial garments in place that is low in cost and effective.

According to one aspect of the present invention there is provided a method of holding a pad for absorption of human exudate in place comprising applying a non-skid coating of a fibrous elastomeric nonwoven on the garment-facing side of said pad.

According to another aspect of the present invention there is provided a pad for absorption of human exudate comprising a skid-resistant layer having a smoothness rating of greater than about 400 wherein said layer comprises a nonwoven elastomeric material.

According to a further aspect of the present invention there is provided a pad for absorption of human exudate comprising a pad having two ends, two longitudinal sides, a body facing permeable surface, a back surface and two wings extending from said longitudinal edges a distance sufficient to extend beyond the edges of the crotch of wearer's undergarment wherein said wings are provided with a nonwoven elastomeric coating on their bodyside.

In preferred embodiments there is thus provided a pad for human exudate that is provided with a fibrous nonwoven elastomeric that has a high coefficient of friction on at least a portion of the back cover of the pad. Among the preferred elastomeric nonwoven materials are the nonwoven materials formed from A-B-A' block copolymers where the A and A' are a styrenic moiety and the B block comprises an elastomeric poly(ethylene-butylene) polymer. The materials preferably for the invention form pads that have a coefficient of friction of greater than about 2 and a Sheffield smoothness rating of greater than about 400 when utilizing a modified ASTM test D-1894.

In a further embodiment a skid-resistant surface is placed on at least a portion of the bodyside of an absorbent pad to hold it in place.

5 Some embodiments of the present invention will now be described by way of example and with reference to the accompanying drawings, in which:-

Figures 1, 2, 3 and 4 are top, side, bottom and end views of a pad in accordance with one embodiment of the invention,

10 Figures 5, 6, 7 and 8 are top, side, bottom and end views of an alternative embodiment of the invention,

Figures 9, 10 and 11 are top, side and bottom views of a pad in accordance with a further embodiment,

15 Figures 12, 13, 14 and 15 are top, bottom, side and perspective views of a coated pad in accordance with one embodiment,

Figures 16 and 17 are top and cross-sectional views of another embodiment of the invention,

Figures 18 and 19 are top and bottom views of another embodiment of a pad in accordance with the invention.

20 Figures 20, 21, 22 and 23 are top, side, bottom and end views of a pad in accordance with another embodiment, and

Figure 24 is a cross-sectional view of the pad of Figure 20.

Illustrated by the pad of Figures 1, 2, 3 and 4 is an hourglass-shaped pad 10 that has a generally planar bodyside surface 12 that has the impermeable backing member 13 joined to the cover 12 by adhesive connection in the border area 14. The hourglass-shaped pad has a thicker absorbent in the middle 18 than at the ends 20 and 22. Applied to the lower surface of the pad 10 is a fibrous nonwoven elastomeric non-skid coating 16.

Figures 5, 6, 7 and 8 illustrate a pad 30 that has a permeable bodyside member 32 that is wrapped around the pad, overlapped at the bottom 34 and the overlap sealed with adhesive (not shown). The lower portion of the pad is provided with a skid-resistant nonwoven elastomeric coating 36. The pad is sealed at the ends 38 and 40 by heat-fusing of the cover material.

Figures 9, 10 and 11 illustrate a pad 50 having rounded ends 52 and 54. The pad is provided with a nonwoven elastomeric skid-resistant coating 56. The bodyside 57 of the pad 50 is provided with a perforated area 60 that aids in flow of material through the permeable cover on the bodyside 57 to the absorbent (not shown) in the interior of the pad 50. The nonwoven elastomeric material 56 covers substantially the entire surface of the back 58 of the pad 50. As used herein top or upper part refers to the bodyside of the pad while back, bottom or lower part refers to the garment side of the pad.



Figures 12, 13, 14 and 15 illustrate a shaped pad 60 in accordance with one embodiment. The shaped pad is provided with gathered areas 62 and 64 at the sides of the pad that are gathered such that the pad 60 curves to better conform to the body. Areas 62 and 64 further raise to form walls to aid in leakage prevention. The pad is provided with a bodyside permeable member 66 and an impermeable backing member 68. In area 70 a nonwoven elastomeric skid-resistant surface coating is provided so that the pad will remain in proper location against the wearer's body. The bodyside permeable member on the top 66 is sealed to the impermeable backing member 68 at heat seal line 72.

Illustrated in Figures 16 and 17 is a pad 80 having wings 82 and 84 that are intended to be sealed by adhesive areas 86 and 88 either to each other or to the wearer's undergarment. The pad as best illustrated in cross-sectional view of Figure 17 is provided with nonwoven elastomeric skid-resistant areas 96 and 98 that face the bodyside of the pad. These areas 96 and 98 will when the pad is worn be located in the groin area of the wearer and prevent movement of the pad by increasing skid resistance against the body. The absorbent member of the pad 94 is illustrated with an hourglass shape. There is also provided a skid-resistant area 100 on the impermeable backing 102 of the pad. The area 100 prevents movement of the pad against the wearer's garment in order to hold the pad in place in combination with skid-resistant areas 96 and 98 and the overlapped wings 82 and 84 that are held in place by the adhesives 86 and 88. It is also possible that a pad such as illustrated in Figures 16 and 17 would not be provided with adhesive areas 86 and 88 such that the extremities 104 and

106 of the wings hang from the edge of the crotch of the undergarment against the user's thighs rather than be fastened under the crotch of the undergarment. An advantage

is that the pad is not rigidly attached to the undergarment but may move somewhat with the movements of the wearer or with movement of the pad's cover.

The feminine pad 110 illustrated in Figures 18 and 19 in the top view of Figure 18 and the bottom view of Figure 19 is also provided with wings. The wings 112 and 114 extend outward from the absorbent area 116 on the bodyside and from the back 118. Substantially the entire back area 118 is provided with the non-slip surface as is substantially the entire area of wings 112 and 114. This pad is designed such that the skid-resistant surface on 118 and wings 112 and 114 bear against the wearer's undergarment to hold the pad in place without use of adhesives. As an alternative it is possible that the wings 112 and 114 could be provided with adhesive on the back surface 118 such that they fasten to each other beneath the wearer's underpants. In another alternative the wings could be provided with the skid-resistant surface of the invention on the bodyside of wings 112 and 114 to resist movement by bearing against the wearer's crotch, groin and thighs.

Illustrated in Figures 20, 21, 22, 23 and 24 is a feminine pad 120 that is provided with an impermeable backing member 122 that comprises an impermeable elastomeric nonwoven material. The bodyside of the pad 124 comprises a permeable material that is sealed to the impermeable backing 122 in the marginal area 126.

As illustrated in the cross-section of Figure 24, the pad is of simple construction in that the impermeable backing 122, heat-sealed to the impermeable cover 124 at the marginal area 126, results in a pad that has sealed components when the elastomeric nonwoven is heat-sealed or adhesively connected to the impermeable backing of the pad. The absorbent 128 is somewhat thicker in the middle portion of the pad. It may be noted from the side view of Figure 21 that the midportion is somewhat thicker for greater absorption in the midcrotch portion of the pad.

As illustrated by the above drawings, the nonwoven elastomeric skid-resistant materials may be applied to any of a variety of catamenial pads and adult and child incontinence garments. Further, the nonwoven elastomeric skid-resistant surface may be applied either to a portion of the bodyside of the pad or to the back of the pad away from the body. Generally the skid-resistant fibrous elastomeric nonwoven material is applied to a large portion of the pad's back surface. However, depending on the pad's size and the anti-skid properties of the particular nonwoven elastomeric utilized, it may be necessary to coat only a portion of the back surface of the pad.

The skid-resistant surfaces may be utilized either as the only garment placement system or in combination with a conventional garment attachment adhesive. For instance a small area of garment attachment adhesive could be utilized in order to hold the pad in place while the undergarment was being raised and lowered, but with the skid-resistant surface serving as the primary positioning means for the pad as it was worn. This would

result in lower cost as less garment attachment adhesive would be utilized and further would allow the pad to move somewhat with the body rather than being rigidly attached to the undergarment.

5       The materials suitable for the invention may be any nonwoven elastomeric that has sufficient skid-resistant properties to hold a feminine or incontinence pad in place in an undergarment during use of the pad. The coefficient of friction of materials has been measured by a Davis Modified form of ASTM test No. D-1894. The  
10       normal test calls for a sled wrapped with Naugahyde to be pulled across the test sample at 5 inches (12.7cm) per minute. The modified test involves wrapping the sled with test samples and pulling them across a Naugahyde sheet. Using this test a coefficient of friction of greater than about 2 has been found to be  
15       satisfactory. A Sheffield smoothness rating of greater than about 400 is found to be preferred for best positioning. A coefficient of friction of greater than about 2 is preferred for best positioning.

20       Nonwoven elastomerics used as non-skid material for the invention may be any suitable composition. Typical of these compositions are the rubbery elastomers containing elastomeric components such as natural rubber and isobutylene, polymerized or blended with other polymers that are provided to control the  
25       degradation, melting point and plasticity of the elastomers. Preferred material for the instant invention are the A-B-A' block copolymers, with polybutydiene or polyacetate midblocks and polystyrene end blocks, polystyrene/polyethylene-butylene/  
30       polystyrene block copolymer resins and blends of such resins with

materials to control their plasticity and degradation. A particularly preferred material is elastomeric A-B-A' block copolymer material where A and A' are each a thermoplastic polymer end block which includes a styrenic moiety such as a poly(vinyl arene) and where B is an elastomeric poly(ethylene-butylene) midblock, blended with a polyolefin to reduce the viscosity of the composition to allow extrusion. The polyolefin is selected from the group including at least one polymer selected from the group including polyethylene, polypropylene, polybutene, ethylene copolymers, polypropylene copolymers, butene copolymers and blends of one or more of these materials. This composition is particularly preferred as it is readily extrudable, may be formed into webs that can be processed to be impermeable and is low in cost. This material is disclosed in greater detail in U.S. Patent 4,663,220 - Wisneski et al. hereby incorporated by reference. Other suitable fibrous elastomeric nonwoven webs are disclosed in U.S. Serial No. 919,282 filed October 15, 1986 by Morman et al. and U.S. 025,557 filed March 13, 1987 by Daponte, both of which are co-assigned with the instant application and both of which are hereby incorporated by reference.

While it has been discussed that the coatings of the invention would be placed over an impermeable barrier, it is also possible that the nonwoven elastomeric coatings of the invention be placed over a fabric liquid permeable member that would become liquid-impermeable when the nonwoven elastomeric was sealed to the fabric. This would have the advantage that a low-cost scrim or nonwoven material could be used as the backing with the nonwoven elastomeric serving both the purpose of forming an impermeable

backing member when sealed to the fabric and forming a  
skid-resistant coating for pad positioning.

5 The above description has been intended to be illustrative  
rather than exhaustive of the possibilities of the invention. For  
instance, while not illustrated the skid-resistant coatings of the  
invention could be utilized for the products intended for partial  
labial disposition such as U.S. 4,673,403 - Lassen et al. The  
skid-resistant coatings also could cover a portion of the  
10 absorbent on the ends or edges of the bodyside of the pad.

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CLAIMS:

1. A method of holding a pad for absorption of human exudate in place comprising applying a non-skid coating of a fibrous elastomeric nonwoven on the garment-facing side of said pad.
2. A method according to Claim 1 wherein said nonwoven elastomeric coating is also applied to a portion of the bodyside surface of said pad to aid in holding said pad in place.
3. A method according to Claim 2 wherein said portion of said bodyside-facing surface to which said fibrous elastomer is coated comprises wings attached to the long side edges of a generally rectangular pad.
4. A method according to Claim 1, 2 or 3 wherein said coating comprises an A-B-A' block copolymer wherein A and A' comprise a styrenic moiety, B comprises an elastomeric poly(ethylene-butylene) midblock, and a polyolefin to aid in extrudability of the block copolymer.
5. A method according to any preceding Claim wherein said elastomeric nonwoven is applied to a fabric backing material for said pad to form a liquid-impermeable member.
6. A pad for absorption of human exudate comprising a skid-resistant layer having a smoothness rating of greater than about 400 wherein said layer comprises a nonwoven elastomeric material.

7. A pad according to Claim 6 wherein said skid-resistant coating is applied to the back of the pad opposite the bodyside-face of the pad.

8. A pad according to Claim 7 wherein said skid-resistant coating further is applied to a portion of the body-facing side of said pad.

9. A pad according to any of Claims 6 to 8 wherein said pad has a coefficient of friction of greater than about 2.

10. A pad according to any of Claims 6 to 9 wherein said pad is a feminine pad having wings extending from the crotch portion and said wings comprise a nonwoven fibrous elastomer.

11. A pad for absorption of human exudate comprising a pad having two ends, two longitudinal sides, a body facing permeable surface, a back surface and two wings extending from said longitudinal edges a distance sufficient to extend beyond the edges of the crotch of wearer's undergarment wherein said wings are provided with a nonwoven elastomeric coating on their bodyside.

12. A pad according to Claim 11 further comprising an adhesive on the back of at least one of said wings for fastening said pad around the panties of a wearer.

13. A pad according to Claim 11 or 12 wherein said elastomeric nonwoven comprises:



(1) at least about 10 percent by weight of an A-B-A' block copolymer, where A and A' are each a thermoplastic polymer endblock,

(2) up to 90 percent by weight of a polyolefin which when blended with the A-B-A' block copolymer serves to form a fiber extrudable composition.

14. A pad according to Claim 13 wherein said polyolefin is selected from the group consisting essentially of polyethylene, polypropylene, polybutene, ethylene copolymers, propylene copolymers, butene copolymers and blends of two or more of these materials.

15. A method of holding an absorbent pad in place substantially as hereinbefore described with reference to the accompanying drawings.

16. An absorbent pad substantially as hereinbefore described with reference to Figs 1 to 4, or Figs 5 to 8, or Figs 9 to 11, or Figs 12 to 15, or Figs 16 and 17, or Figs 17 and 19, or Figs 20 to 24 of the accompanying drawings.

